TracVision® BY KVH INDUSTRIES

# TracVision® M1
## with Multi-service Interface Box/Controller
## (Model M1DX – DISH Network Configuration)
## (Model M1-C – ExpressVu Configuration)

Models M1DX / M1-C

# TracVision® M1 User's Guide

# TracVision M1

## Multi-service Interface Box/ Controller Configuration

## User's Guide

This user's guide provides all of the basic information you need to operate, set up, and troubleshoot the TracVision M1 satellite TV antenna system. For detailed installation information, please refer to the *TracVision M1 Installation Guide*.

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**If you have any comments regarding this manual, please e-mail them to manuals@kvh.com. Your input is greatly appreciated!**

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# 1. Introduction

This chapter provides a basic overview of this manual and your TracVision system.

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1

# Using this Manual

This manual provides complete operation, setup, and troubleshooting information for your TracVision system.

## Who Should Use This Manual

The **user** should refer to the "Operation" and "System Preferences" chapters to learn how to operate the system.

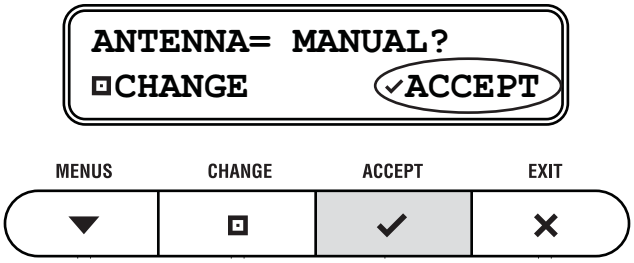
The **user**, **installer**, or **servicing technician** should refer to the "Setup" chapter for information on configuring the system for the desired satellite TV service and satellites. The **user**, **installer**, or **servicing technician** should also refer to the "Wiring Diagrams" appendix for information on connecting additional receivers.

The **user** and/or s**ervicing technician/installer** should refer to the "Troubleshooting" chapter to help identify the cause of a system problem.

## Flowchart Conventions

When instructions indicate to select a specific menu option, press the corresponding interface box button located below the display (see Figure 1).

Figure 1 Example of Menu Option and Corresponding Interface Box Button



## Typographical Conventions

This manual uses the following typographical conventions:

| Text Example | Description |
|---|---|
| SELECT SATELLITES | Text as it appears on the interface box display; also denotes receiver remote control buttons |
| See "System Overview" on page 5. | Cross-reference to another chapter in the manual or to a website |

## Types of Notices

This manual uses the following types of notices to call attention to important or related information:

***IMPORTANT!***

Be sure to read these carefully to ensure proper operation and configuration of your TracVision system.

***NOTE:*** *Notes contain useful information about system settings.*

***TIP:*** *Tips contain helpful information, allowing you to get the most out of your TracVision system.*

## Related Documentation

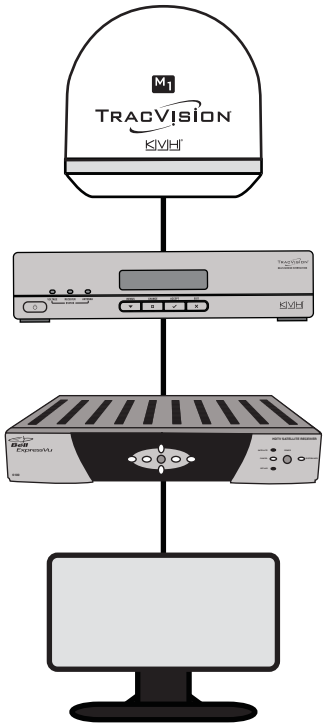
In addition to this User's Guide, the following documents are provided with your TracVision system:

| Document | Description |
|---|---|
| Installation Guide | Complete installation instructions |
| Product Registration Form | Details on registering the product |
| Warranty Statement | Warranty terms and conditions |
| Contents List | List of every part supplied in the kit |

# System Overview

Your TracVision M1 is a state-of-the-art, actively stabilized antenna system that delivers live satellite TV to your mobile audio/video entertainment system. A basic system is illustrated below. Detailed wiring diagrams are provided in "Wiring Diagrams" on page 51.

**Figure 2 TracVision M1 Basic System Diagram**




KVH TracVision M1
Antenna

KVH Multi-service
Interface Box/Controller

Satellite TV Receiver
*Customer-supplied; see page 6 for list of KVH-validated receivers*

Television
*Customer-supplied*

## System Components

The TracVision M1 system includes the following components:

The **antenna** uses integrated DVB technology to quickly acquire and track the correct satellite, switch between satellites, and send TV signals to the interface box. Internal gyros allow the antenna to track the satellite at all times, even while you're on the move!

The **multi-service interface box/controller** supplies power to the antenna and delivers satellite TV signals to your satellite TV receiver. The interface box also allows you to set up the system using the pushbuttons and LCD display.

***NOTE:*** *Henceforward, this manual uses the term "interface box" to refer to the multi-service interface box/controller.*

## Compatible Receivers

To ensure compatibility with the TracVision system, KVH recommends the receiver models shown in the table below. These receivers have all been validated by KVH to work well with the TracVision system. *For information on connecting different receiver models, contact KVH Technical Support at 401-847-3327.*

**Figure 3 KVH-Validated Receivers**

| **Standard-Definition Models** | | |
|---|---|---|
| DIRECTV | DISH Network | ExpressVu |
| D12<br>D11<br>D10 | 311<br>211k<br>211 | 3100<br>4110 |
| **High-Definition (HD) Models** | | |
| DIRECTV | DISH Network | ExpressVu |
| HD not supported | 211k<br>211 | 6100<br>6131 |

## ExpressVu Configuration

Other than a satellite TV receiver, no additional components are needed to receive both high-definition (HD) and standard-definition programming from ExpressVu's 91 and 82 satellites. The antenna will automatically switch between these satellites as necessary as you change channels using the primary receiver's remote.

## DISH Network Configuration

Other than a satellite TV receiver, no additional components are necessary to receive both high-definition (HD) and standard-definition programming from three DISH Network satellites: 119, 110, and either 61 or 129 (choose the third satellite for your particular region - see "DISH Network Setup" on page 28). The antenna will automatically switch between these three satellites as necessary as you change channels using the primary receiver's remote.

## DIRECTV Configuration

You can receive DIRECTV programming from the 101 and 119 satellites without any special equipment. All you need is a DIRECTV receiver. The antenna will automatically switch between these two satellites as necessary as you change channels using the primary receiver's remote.

# 2. Operation

This chapter explains everything you need to know to operate the TracVision system.

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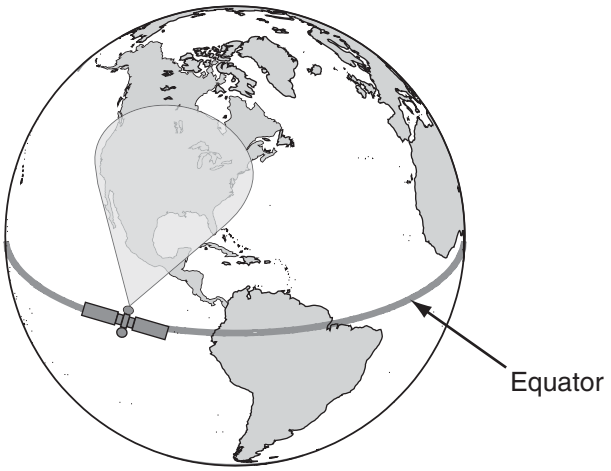
# Receiving Satellite TV Signals

Television satellites are located in fixed positions above the Earth's equator and beam TV signals down to certain regions of the planet (not worldwide). To receive TV signals from a satellite, you must be located within that satellite's unique coverage area.

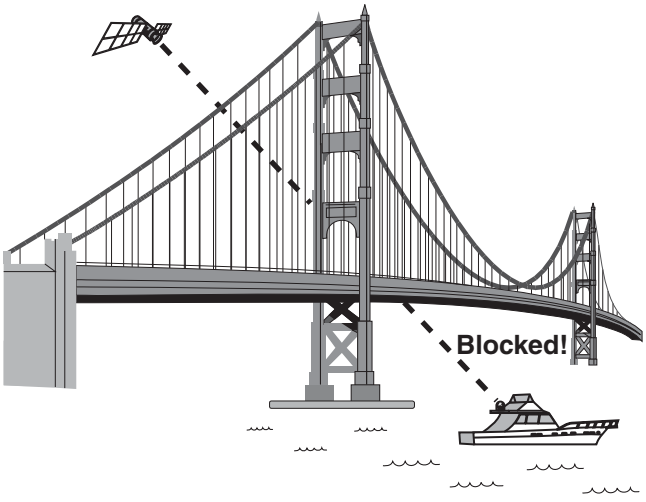
***TIP:*** *For your convenience, KVH provides links to several websites that offer satellite coverage information. Simply visit our website at* ***www.kvh.com/footprint****.*

**Figure 4 Example of a Satellite Location and Coverage Area**




In addition, since TV satellites are located above the equator, the TracVision antenna must have a clear view of the sky to receive satellite TV signals. Anything that stands between the antenna and the satellite can block the signal, resulting in lost reception. Common causes of blockage include trees, buildings, bridges, and onboard equipment. Heavy rain, ice, or snow might also temporarily interrupt satellite signals.

**Figure 5 Example of Satellite Blockage**



# Turning the System On/Off

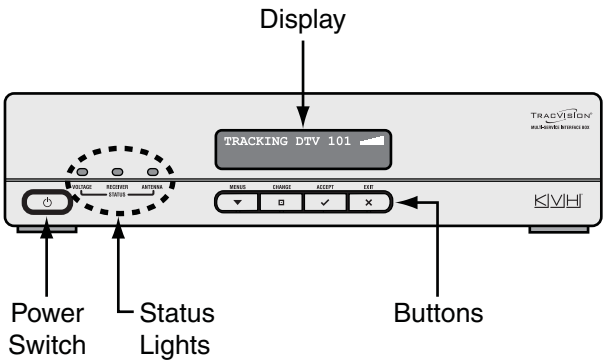
Since the interface box supplies power to the antenna, you can turn the antenna on or off using the interface box Power switch.

## Turning On the System

Follow the steps below to turn on your TracVision system.

1. Make sure the antenna has a clear view of the sky.
2. Turn on your satellite TV receiver and TV.
3. Press the Power switch on the front of the TracVision interface box.

**Figure 6 Interface Box Components**




4. Wait one minute for system startup.

   Once the antenna finds the correct satellite, all three status lights on the interface box should be lit green. If any lights are not lit green, see "System Status Lights" on page 40.

## Turning Off the System

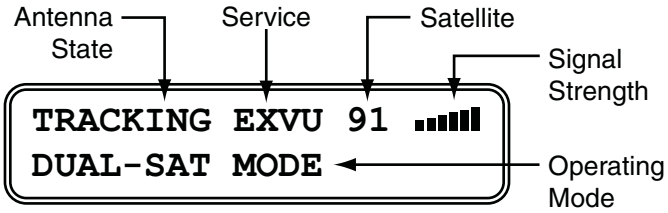
Follow the steps below to turn off your TracVision system.

1. Press the Power switch on the front of the TracVision interface box.
2. Turn off your satellite TV receiver and TV.

# Understanding the Status Screen

Following startup, the interface box displays the current system status.

**Figure 7 Interface Box Status Screen**




| Screen Field | Description |
|---|---|
| Antenna State | Current state of the antenna:<br>• Idle<br>• Initializing<br>• Searching<br>• Tracking<br>• Error |
| Service | Satellite TV service currently set up in the TracVision system:<br>• DTV (DIRECTV)<br>• DISH (DISH Network)<br>• EXVU (ExpressVu)<br>• MAN (Manual) |
| Satellite | Satellite that the antenna is currently tracking<br>*This number refers to the satellite's "orbital slot," which is its longitudinal location above the equator.* |
| Signal Strength | Strength of the satellite TV signal, as measured by RF level<br>*The more bars, the stronger the signal, just like a cell phone. Three bars = good reception.* |
| Operating Mode | Mode of operation currently set up in the TracVision system:<br>• Dual-Sat (DIRECTV or ExpressVu)<br>• Single-Sat (ExpressVu)<br>• DISH 1000/129 (DISH Network)<br>• DISH 1000/61 (DISH Network)<br>• DISH 500 (DISH Network)<br>*For a list of satellites tracked in each operating mode, see* "Setup" on page 23. |

# Switching Satellites

If your system is set up to track multiple satellites, you can easily switch between them. Use the switching method that applies to your particular setup. You can identify the current satellite switching method by the format of the status screen:

| Status Screen Examples | Satellite Switching Method |
|---|---|
| TRACKING DISH 119<br>DISH 1000/129 MODE<br><br>TRACKING EXVU 91<br>DUAL-SAT MODE | Automatic |
| TRACKING DISH 119<br>PUSH ⊡ TO SWITCH SAT<br><br>TRACKING EXVU 91<br>PUSH ⊡ TO SWITCH SAT | Manual |

## Automatic Switching

All operating modes provide automatic satellite switching using the primary receiver (the receiver connected to the "Unstacked Output" jack on the interface box). The antenna will automatically switch satellites as you change channels using the primary receiver's remote.

***NOTE:*** *The receiver might take up to 30 seconds to display video when changing channels, switching between satellites, and/or switching between standard-definition and high-definition channels.*

***NOTE:*** *DISH Network receivers may switch to a different satellite on their own in response to a blockage condition. For example, if the antenna's view of the 110 satellite becomes blocked for over a minute, the receiver may try switching to the 119 satellite. If this occurs, you will see an error message on the TV. Once the antenna can see the selected satellite again, the receiver will automatically switch back and the error message will disappear.*

### How Switching Satellites Affects Additional Receivers

The TracVision system tracks one satellite at a time. Therefore, if you switch satellites using the primary receiver, televisions connected to other receivers might display different programming, no programming, or an error message. Simply select a channel carried by the new satellite, or use the primary receiver to switch back to the original satellite. Only the primary receiver controls satellite selection.

## Manual Switching

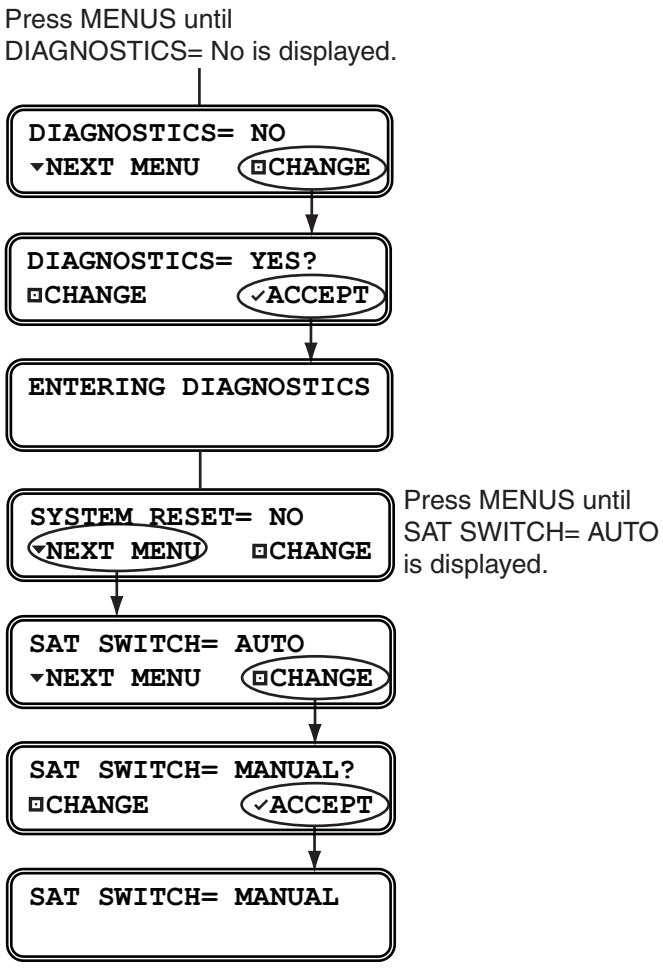
If you set up the system to track a custom set of satellites in Manual mode, you can use the interface box to switch among them. Simply press the CHANGE button until the display shows the desired satellite. Then press ACCEPT.

# Changing the Satellite Switching Mode

Unless your system is set up in Manual mode, the antenna will automatically switch satellites as you change channels using the receiver's remote control. However, if you want to manually select a satellite for some reason, the interface box allows you to switch from automatic to manual switching. (You can also switch back to automatic switching using this same menu function.)

Follow the steps in the flowchart below to change the satellite switching mode.

**Figure 8 Satellite Switching Mode**



# Product Care

Please consider the following antenna care guidelines for maintaining peak performance:

- Periodically wash the exterior of the antenna dome with fresh water and mild detergent. Avoid harsh cleansers and volatile solvents (such as acetone) and do not spray the dome directly with high-pressure water.

- If you wish to paint the dome, use only non-metallic automotive paint without a primer coat. Any paint that contains metal will block satellite signals and impair reception.

# 3. System Preferences

This chapter explains how to change the brightness and latitude/longitude settings.

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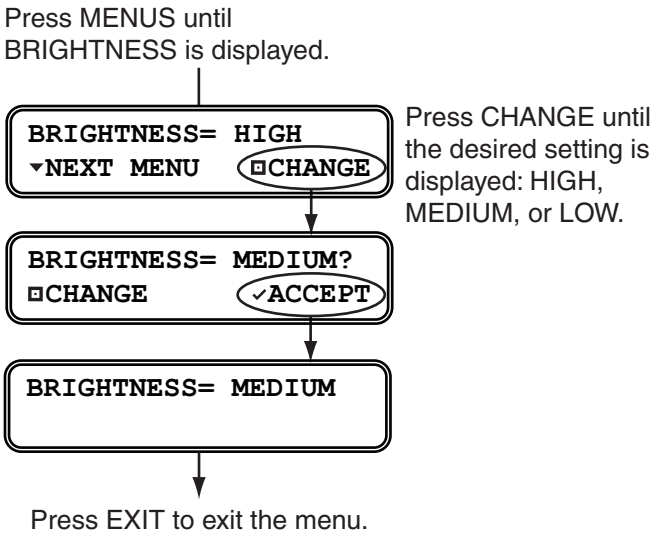
# Adjusting the Display Brightness

Follow the steps in the flowchart below if you need to adjust the brightness of the interface box display.

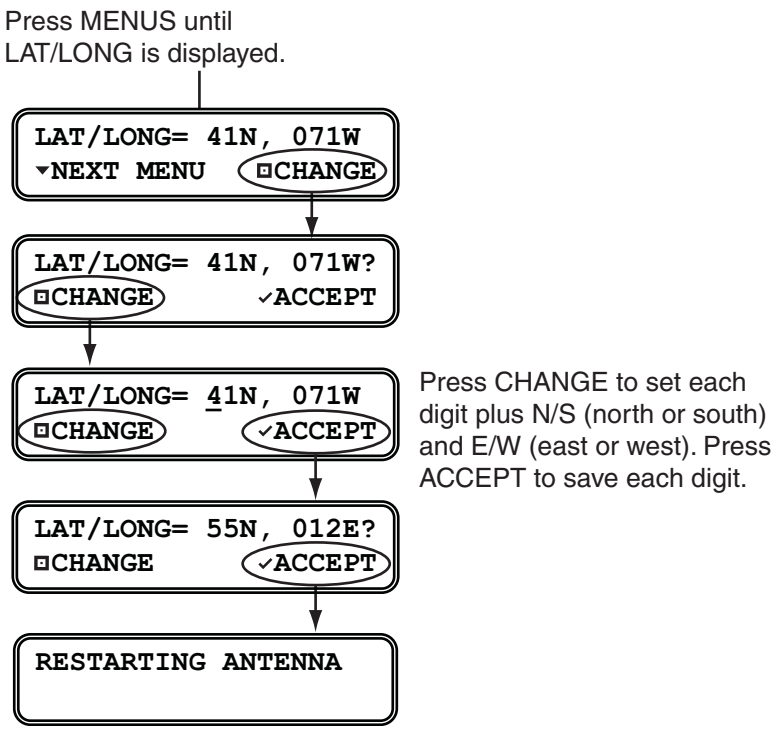
**Figure 9 Brightness Setting**



# Entering Latitude/Longitude

Follow the steps in the flowchart below to enter your vessel's latitude and longitude into the system. The antenna will use your position information to speed up satellite acquisition. (If the antenna knows where you are located, it knows where it should start looking for the satellite.)

**Figure 10 Latitude/Longitude Setting**



# 4. Setup

When you turn on the TracVision system for the first time, the interface box display shows "SYSTEM NEEDS SETUP." This chapter explains how to set up the system for your desired satellite TV service.

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# ExpressVu Setup

You can set up the system for any one of the following ExpressVu operating modes:

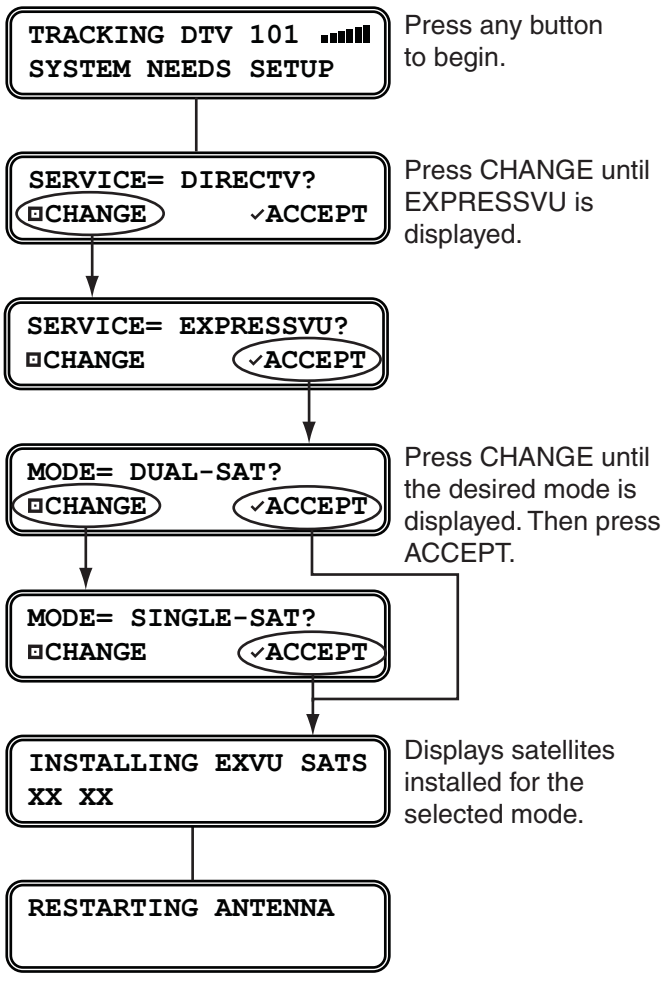
| Mode | Satellites Tracked |
|---|---|
| Dual-Sat | 91 and 82 |
| Single-Sat | 91 only |

## Step 1 - Set the Operating Mode in the Antenna

Follow the steps in Figure 11 to set up the antenna for your selected ExpressVu operating mode. Then keep the antenna turned on for the next step.

***NOTE:*** *If the status screen does not show "SYSTEM NEEDS SETUP," follow the steps in* "Resetting the System to Change Setup" on page 36.

Figure 11 ExpressVu Setup



## Step 2 - Run Receiver Check Switch Tests

To configure the **primary receiver** for your selected ExpressVu mode and automatic satellite switching, you need to run two Check Switch tests on the receiver. The first Check Switch test finds the correct satellites; the second configures the receiver for those satellites. To configure **additional receivers** for your selected mode, you need to run just one Check Switch test on each (see page 27).

***IMPORTANT!***

If you remove a receiver from the vessel and configure it for a home setup, you will need to repeat this step to reconfigure that receiver for a mobile setup whenever you reconnect it to the TracVision system.

### Primary Receiver - Run Two Check Switch Tests

Follow these steps to run two Check Switch tests on the primary receiver, which is connected to the "Unstacked Output" jack on the interface box. This receiver controls satellite selection.

1. Make sure the vessel is docked in calm water, and ensure the antenna has an unobstructed view of the sky so it can "see" all of the desired satellites.
2. Apply power to the TV and receiver. (If the antenna is turned off, turn it back on using the interface box power switch and wait for system startup, until the interface box shows "TRACKING.")
3. Using the receiver's remote, go to the "Point Dish/ Signal Strength" screen (press MENU, 6, 1, 1).
4. Choose **Check Switch**, then press SELECT.
5. Choose **Check**, then press SELECT.
6. Wait at least 15 minutes, or until the interface box shows "PLEASE RUN ANOTHER CHECK SWITCH," before proceeding to allow the antenna to find all of the satellites. Disregard any messages that appear on the TV screen; they do not correctly indicate when the antenna is ready for the next Check Switch test.
7. Once you have waited the appropriate amount of time, choose **Retest**, then press SELECT to run a second Check Switch test.

8. Once the Check Switch test is complete, refer to the table in Figure 12 and verify the values displayed on your TV match those required for your selected service.

   **If your values match**: Exit the menu and allow the receiver to download the program guide.

   **If your values do not match, and you selected Single-Sat mode**: It is normal for your TV to show "No Switch Detected," "Switch Type Unknown," or a similar error message. No action is required.

   **If your values do not match, and you selected Dual-Sat mode**: Reset the system (follow the process on page 36), then repeat the entire ExpressVu setup process, starting with Step 1 on page 25.

Figure 12 Expected Check Switch Results

### ExpressVu Dual-Sat Results

| **Input** | 1 | 1 | 2 | 2 |
|---|---|---|---|---|
| **Satellite** | 91 | 91 | 82 | 82 |
| **Polarity** | Odd | Even | Odd | Even |
| **Status** | Reception Verified | | | |
| **Switch** | SW21 | | | |

### Additional Receiver(s) - Run One Check Switch Test

If any receivers are connected to the "Stacked Output" jack on the interface box, follow these steps to run a single Check Switch test on each additional receiver, one at a time.

1. Temporarily disconnect the primary receiver from the "Unstacked Output" jack on the interface box. Connect the additional receiver in its place.
2. Perform Steps 1-5 on page 26 to run the test.
3. Wait 15 minutes, then verify that the values displayed on the TV match those shown in Figure 12. If the values do not match, and the system is set to Dual-Sat mode, try running another Check Switch test. If your system is set to Single-Sat mode, an error message will appear instead; this is normal.

# DISH Network Setup

You can set up the system for any one of the following DISH Network operating modes:

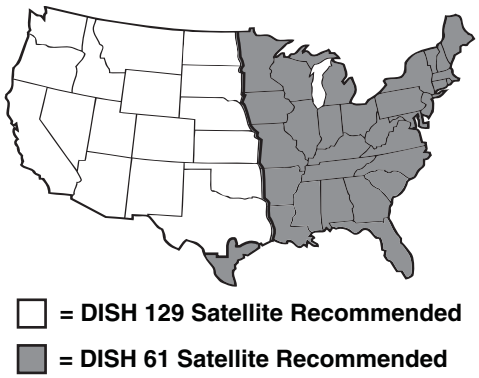
| Mode | Satellites Tracked |
|---|---|
| DISH 1000/129 | 119, 110, and 129 |
| DISH 1000/61 | 119, 110, and 61 |
| DISH 500 | 119 and 110 |

Whichever mode you choose, the antenna will automatically switch between satellites as necessary as you change channels using your primary receiver's remote control.

## DISH 1000/129 or DISH 1000/61

To ensure you receive the best satellite reception, use the map in Figure 13 to help determine the appropriate DISH 1000 mode for your geographic area. Check with DISH Network for local channels availability.

Figure 13 Approximate Areas Recommended for DISH 1000 Modes




## DISH 500

Select this mode if you wish to receive programming from just the 119 and 110 satellites for DISH 500 service.

## Setup Process

Once you have chosen an operating mode, perform the steps on the following pages to set up the system for DISH Network service:

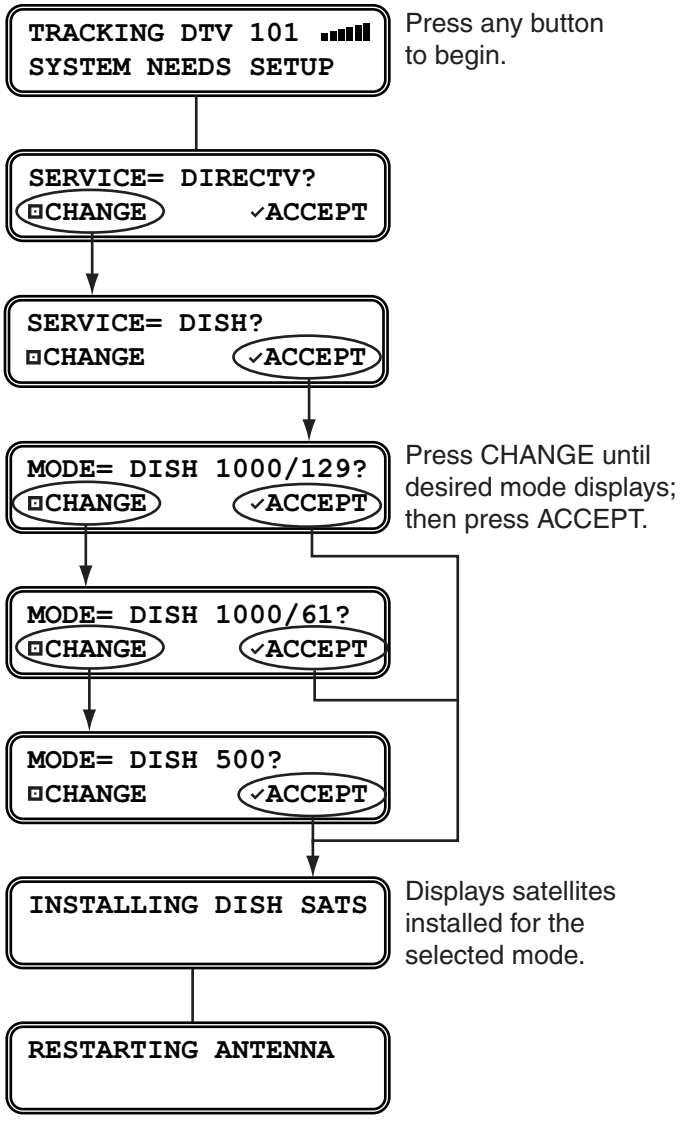
1. Set the operating mode in the antenna
2. Run receiver Check Switch tests

## Step 1 - Set the Operating Mode in the Antenna

Follow the steps in Figure 14 to set up the antenna for your selected DISH Network operating mode. Then keep the antenna turned on for the next step.

***NOTE:*** *If the status screen does not show "SYSTEM NEEDS SETUP," follow the steps in* "Resetting the System to Change Setup" on page 36.

Figure 14 DISH Network Setup



## Step 2 - Run Receiver Check Switch Tests

***IMPORTANT!***

If your primary receiver was **preconfigured** by KVH for your desired DISH Network satellites, you only need to run **one** Check Switch test to set up the system, not two as described below.

To configure the **primary receiver** for your selected DISH Network mode and automatic satellite switching, you need to run two Check Switch tests on the receiver. The first Check Switch test finds the correct satellites; the second configures the receiver for those satellites. To configure **additional receivers** for your selected mode, you need to run just one Check Switch test on each (see page 32).

***IMPORTANT!***

If you remove a receiver from the vessel and configure it for a home setup, you will need to repeat this step to reconfigure that receiver for a mobile setup whenever you reconnect it to the TracVision system.

### Primary Receiver - Run Two Check Switch Tests

Follow these steps to run two Check Switch tests on the primary receiver, which is connected to the "Unstacked Output" jack on the interface box. This receiver controls satellite selection.

1. Make sure the vessel is docked in calm water, and ensure the antenna has an unobstructed view of the sky so it can "see" all of the desired satellites.
2. Apply power to the TV and receiver. (If the antenna is turned off, turn it back on using the interface box power switch and wait for system startup, until the interface box shows "TRACKING.")
3. Using the receiver's remote, go to the "Point Dish/ Signal Strength" screen (press MENU, 6, 1, 1).
4. Choose **Check Switch**, then press SELECT.
5. Choose **Test**, then press SELECT.
6. Wait at least 15 minutes, or until the interface box shows "PLEASE RUN ANOTHER CHECK SWITCH," before proceeding to allow the antenna to find all of the satellites. Disregard any messages that appear on the TV screen; they do not correctly indicate when the antenna is ready for the next Check Switch test.
7. Once you have waited the appropriate amount of time, select **Test** again to run a second Check Switch test.

8. Once the Check Switch test is complete, refer to the tables in Figure 15 and verify the values displayed on your TV match those required for your selected service.

   **If your values match**: Exit the menu and allow the receiver to download the program guide.

   **If your values do not match**: Reset the system (follow the process on page 36), then repeat the entire DISH setup process, starting with Step 1 on page 29.

Figure 15 Expected Check Switch Results

### DISH 1000/129 Results

| **Port** | 1 | 2 | 3 |
|---|---|---|---|
| **Satellite** | 119 | 110 | 129 |
| **Trans** | OK | OK | OK |
| **Status** | Reception Verified | | |
| **Switch** | SW64 | | |

### DISH 1000/61 Results

| **Port** | 1 | 2 | 3 |
|---|---|---|---|
| **Satellite** | 119 | 110 | 61 |
| **Trans** | OK | OK | OK |
| **Status** | Reception Verified | | |
| **Switch** | SW64 | | |

### DISH 500 Results

| **Input** | 1 | 1 | 2 | 2 |
|---|---|---|---|---|
| **Satellite** | 119 | 119 | 110 | 110 |
| **Polarity** | Odd | Even | Odd | Even |
| **Status** | Reception Verified | | | |
| **Switch** | SW42 | | | |

### Additional Receiver(s) - Run One Check Switch Test

***IMPORTANT!***

You do not need to run a Check Switch test on an additional receiver if it was **preconfigured** by KVH for your desired DISH Network satellites.

If any receivers are connected to the "Stacked Output" jack on the interface box, follow these steps to run a single Check Switch test on each additional receiver, one at a time.

1. Temporarily disconnect the primary receiver from the "Unstacked Output" jack on the interface box. Connect the additional receiver in its place.
2. Perform Steps 1-5 on page 30 to run the test.
3. Wait 15 minutes, then verify that the values displayed on the TV match those shown in Figure 15. If the values do not match, try running another Check Switch test.

# DIRECTV Setup

You can set up the system for any one of the following DIRECTV operating modes:

| Mode | Satellites Tracked |
|---|---|
| Tri-Sat Auto | Not used |
| Tri-Sat Pairs | |
| Dual-Sat | 101 and 119 |

### Tri-Sat Auto or Tri-Sat Pairs – Not Used

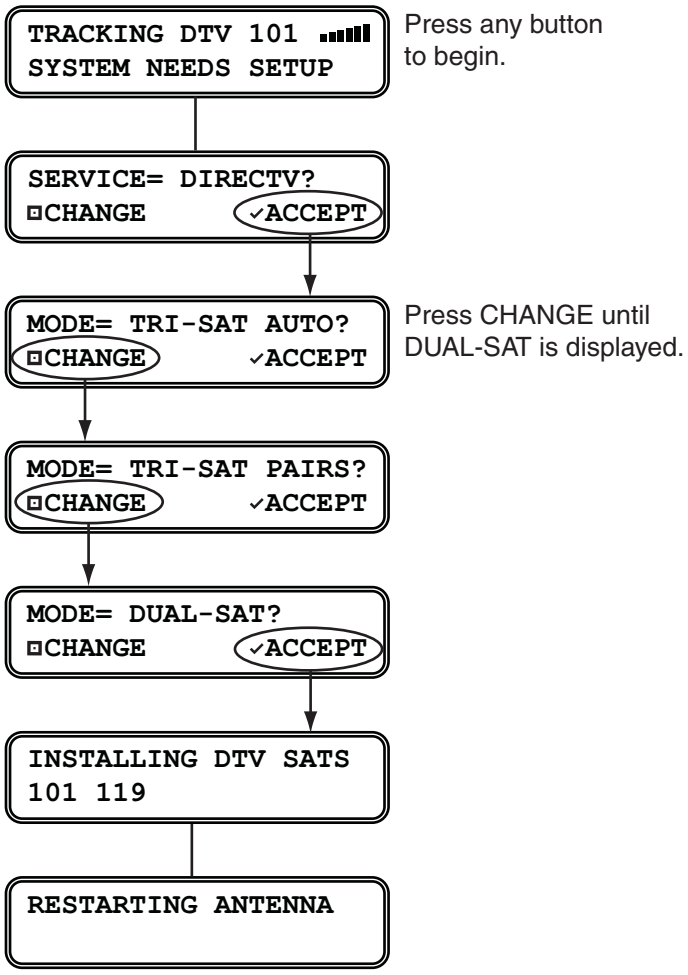
These modes are no longer used. The Tri-Sat Auto mode supported the Tri-Sat AutoSwitch; the Tri-Sat Pairs mode supported the HDTV Converter. Neither of these devices is available today.

### Dual-Sat

Select this mode to receive programming from the 101 and 119 satellites for DIRECTV service. Follow the steps in Figure 16 on page 34 to set up the antenna.

***NOTE:*** *If the status screen does not show "SYSTEM NEEDS SETUP," follow the steps in* "Resetting the System to Change Setup" on page 36.

Figure 16 DIRECTV Setup



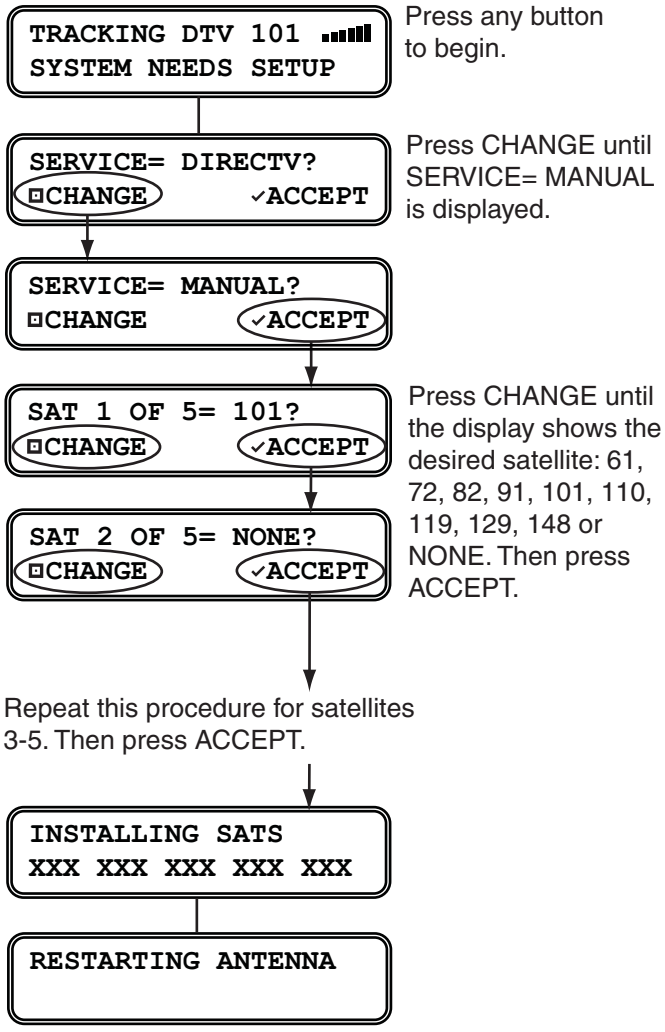
# Manual Mode Setup

If none of the automatic modes described earlier include all of the satellites you wish to track, you can set up the system in Manual mode to track up to five satellites of your choice. You will then be able to switch between these satellites using the buttons on the interface box.

Follow the steps in Figure 17 to set up the antenna in Manual mode.

***NOTE:*** *If the status screen does not show "SYSTEM NEEDS SETUP," follow the steps in* "Resetting the System to Change Setup" on page 36.

**Figure 17 Manual Mode Setup**



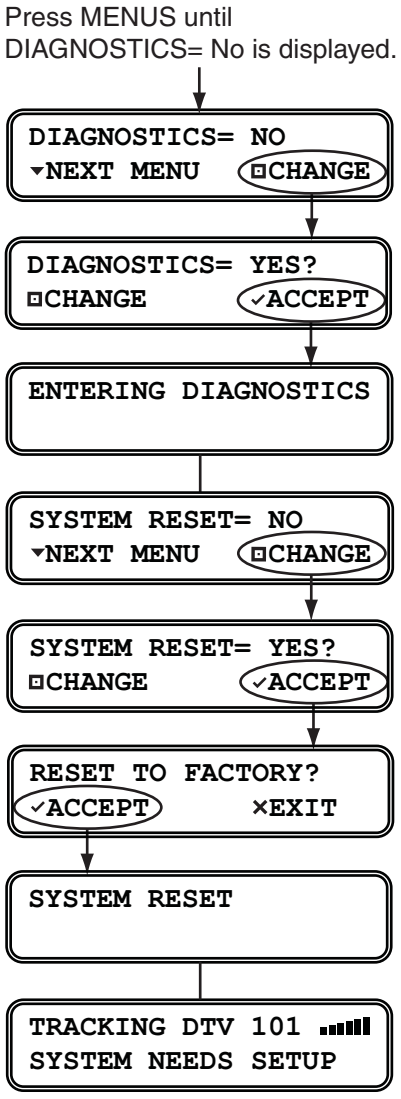
# Resetting the System to Change Setup

If you need to change the antenna's setup to receive a different satellite TV service and/or track a different satellite, follow the steps in Figure 18 to reset the system. Once the system has reset to its factory conditions, you will be able to set up the system as described earlier in this section.

***IMPORTANT!***

(DISH/ExpressVu only) You will need to reconfigure all of the receivers after you select a different operating mode. Refer to page 26 (ExpressVu) or page 30 (DISH) for details.

**Figure 18 Factory Reset**



# 5. Troubleshooting

This chapter identifies potential problems along with their possible causes and solutions. It also explains how to get technical support.

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5

# Five Simple Checks

If you are experiencing a problem receiving satellite TV with your TracVision system, perform the five simple checks below. If none of these are the problem, check the status lights on the interface box and/or perform a diagnostics test, as explained in "System Status Lights" on page 40 and "Running the Diagnostics Test" on page 43.

***TIP:*** *You can also try resetting the satellite TV receiver. Turn off and unplug the receiver, wait one minute, then plug it back in and turn it back on.*

## Can the antenna see the satellite?

The antenna requires an unobstructed view of the sky to receive satellite TV signals. Common causes of blockage include trees, buildings, bridges, mountains, and onboard equipment.

## Is there excessive dirt or moisture on the antenna dome?

Dirt buildup or moisture on the dome can reduce satellite reception. Clean the exterior of the dome periodically.

## Is it raining heavily?

Heavy rain or snow can weaken satellite TV signals. Reception should improve once the inclement weather subsides.

## Is the receiver configured for your selected mode? (ExpressVu/DISH Only)

All ExpressVu and DISH Network receivers that you connect to the TracVision system need to be configured for the antenna's operating mode. To configure a receiver, you need to run its Check Switch test. Refer to the step-by-step instructions on page 26 (ExpressVu) or page 30 (DISH).

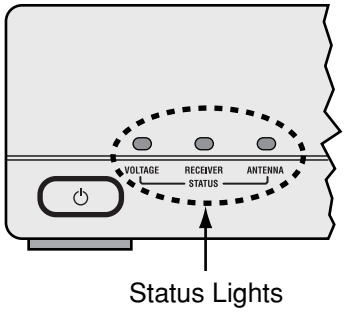
## Is everything turned on and connected properly?

Make sure the power switch on the front of the interface box is turned on (the VOLTAGE light on the front of the interface box should be lit green). Also, make sure your TV and receiver are both turned on and set up for the satellite input. Finally, check the cables connecting all of these components to ensure none have come loose.

# System Status Lights

Three status lights on the front of the interface box indicate the current status of the system and can help you identify problems (see Figure 19).

Figure 19 System Status Lights




During normal operation, all three status lights should be lit green. The following tables explain what the different light conditions indicate.

## VOLTAGE Light

The table below explains what the VOLTAGE light indicates.

| Light is... | Indicates | Description |
|---|---|---|
| Off | Off | Interface box is off (power switch is off) or no power input |
| Green | OK | Good power (10-16 VDC at interface box) |
| Green, flashing | Cable Open | Open detected in antenna cable (check the antenna coax connection) |
| Orange | Low Power | Low power (9-10 VDC) at interface box) |
| Red, flashing | Bad Power | Insufficient power (less than 9 VDC or more than 16 VDC input) |

## RECEIVER Light

The table below explains what the RECEIVER light indicates.

| Light is... | Indicates | Description |
|---|---|---|
| Green | OK | Good communications with receiver |
| Orange | No comm | No communications with receiver; receiver is off or disconnected |
| Orange, flashing | Overload | Overload or short circuit detected on the antenna cable |
| Red | Fault | Power fault detected in interface box |

## ANTENNA Light

The table below explains what the ANTENNA light indicates.

| Light is... | Indicates | Description |
|---|---|---|
| Off | Off | Antenna is off, disconnected, or has insufficient power |
| Green | Tracking | Antenna is tracking the selected satellite |
| Green, flashing | Searching | Antenna is searching for a satellite |
| Orange, flashing | Overload | Overload or short circuit detected on the antenna cable |
| Red | No comm | No communications with antenna |
| Red, flashing | Fault | Error detected in antenna |

# Error Messages

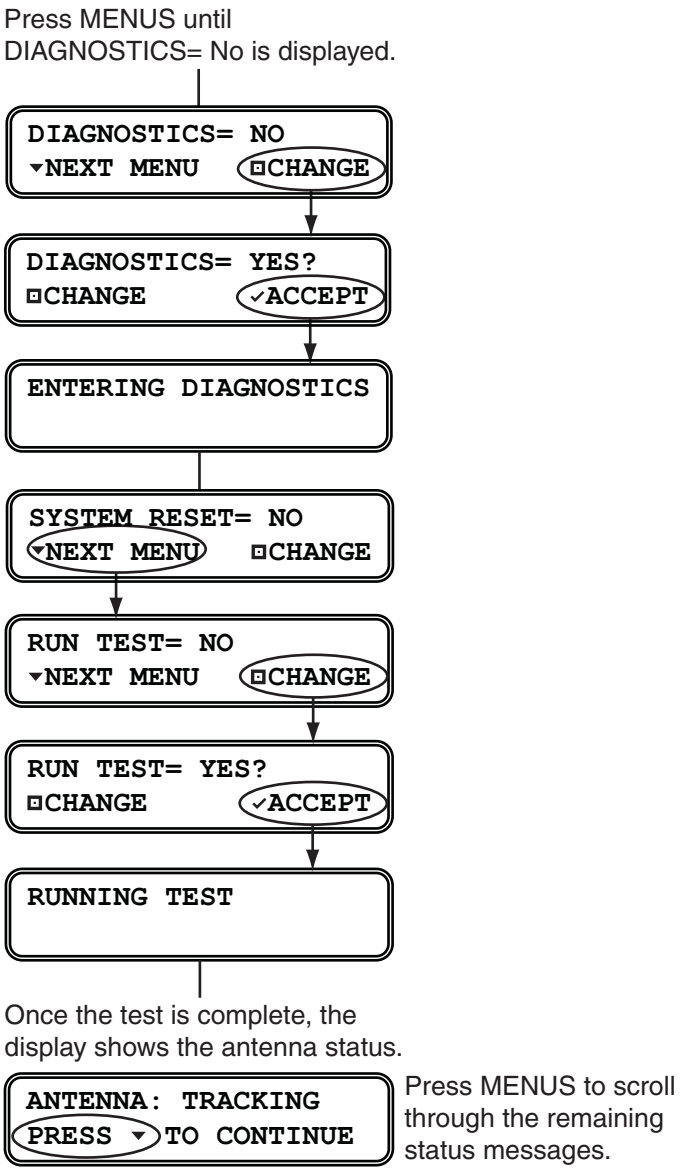
The table below lists possible error messages and the appropriate corrective action.

| Warning | Description |
|---|---|
| SYSTEM SAT MISMATCH<br>PRESS ✓ TO FIX | The interface box and antenna are out of sync. Just press ACCEPT to synchronize. |
| SAT NOT INSTALLED | The receiver is tuned to a channel carried by a satellite that is not installed in the antenna. You might need to change your setup. |
| TRACKING DTV 101 ▂▃▄▅▆<br>SYSTEM NEEDS SETUP | This is not a true error message. This screen indicates that the system needs to be configured for the desired satellite service/ configuration. Refer to "Setup" on page 23 for detailed setup information. |

# Running the Diagnostics Test

In addition to the front panel status lights, the interface box includes a self-test function within its Diagnostics menu. Follow the steps in Figure 20 to perform a diagnostic test. For information on diagnostic test results, see "Diagnostic Test Results" on page 44.

**Figure 20 Diagnostics Test**



## Diagnostic Test Results

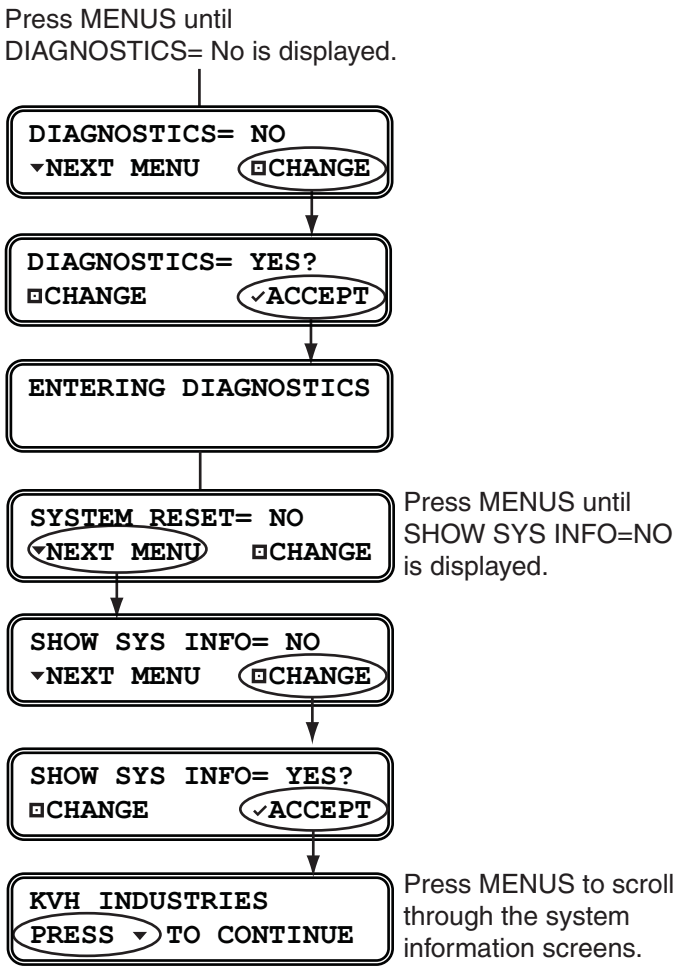
The table below lists all of the status messages.

| Status Message | Description |
|---|---|
| ANTENNA: TRACKING<br>PRESS ▼ TO CONTINUE | Antenna status: Idle, Initializing, Searching, Tracking, or Error |
| SATELLITE: 91<br>PRESS ▼ TO CONTINUE | Name of the currently selected satellite |
| BIT ERROR: OK,928<br>PRESS ▼ TO CONTINUE | Bit error rate:<br>OK: Less than 2001<br>High: Between 2001-8000<br>Bad: Greater than 8000 |
| AGC LEVEL: OK,22500<br>PRESS ▼ TO CONTINUE | Automatic gain control level:<br>OK: Between 20000-25000<br>Bad: Less than 20000 or greater than 25000 |
| SAT 1: 91<br>PRESS ▼ TO CONTINUE | List of installed satellites. Press MENUS to scroll through the list |
| LAT/LONG: 41N, 071W<br>PRESS ▼ TO CONTINUE | Last latitude/longitude that you entered into the antenna |
| CABLE STATE: OK<br>PRESS ▼ TO CONTINUE | Antenna cable status:<br>OK, Open, or Shorted |
| SYSTEM DC: OK,12.3<br>PRESS ▼ TO CONTINUE | Input voltage (DC power):<br>OK: 10-16 VDC<br>Low: 9-10 VDC<br>Bad: Less than 9 VDC or more than 16 VDC |
| ANTENNA DC: OK,41.0<br>PRESS ▼ TO CONTINUE | Antenna voltage (DC power):<br>OK: 39-42 VDC<br>Low: 37-39 VDC<br>Bad: Less than 37 VDC |

# Viewing System Information

You can view the TracVision system's software versions and serial numbers on the interface box display. Follow the steps in Figure 21 to display the system information. For more information on system information results, see "System Information Results" on page 46.

**Figure 21 System Information**



## System Information Results

The table below lists all of the status information messages.

| Information Message | Description |
|---|---|
| TRACVISION M1<br>PRESS ▼ TO CONTINUE | Model of TracVision Antenna |
| SYS SW: 1.2<br>PRESS ▼ TO CONTINUE | Version of antenna main software |
| RF SW: 1.3<br>PRESS ▼ TO CONTINUE | Version of antenna RF software |
| MOTOR SW: 1.4<br>PRESS ▼ TO CONTINUE | Version of antenna motor controller software |
| JBOX SW: 1.5<br>PRESS ▼ TO CONTINUE | Version of interface box software |
| ANT.SER.# 081201234<br>PRESS ▼ TO CONTINUE | Serial number of antenna |
| JBOX SER.# 081205678<br>PRESS ▼ TO CONTINUE | Serial number of interface box |

***NOTE:*** *The first 4 digits of the serial number indicate the year and month (YYMM) the product was manufactured. For example, if the antenna has a serial number of 081201234, it was built in December 2008.*

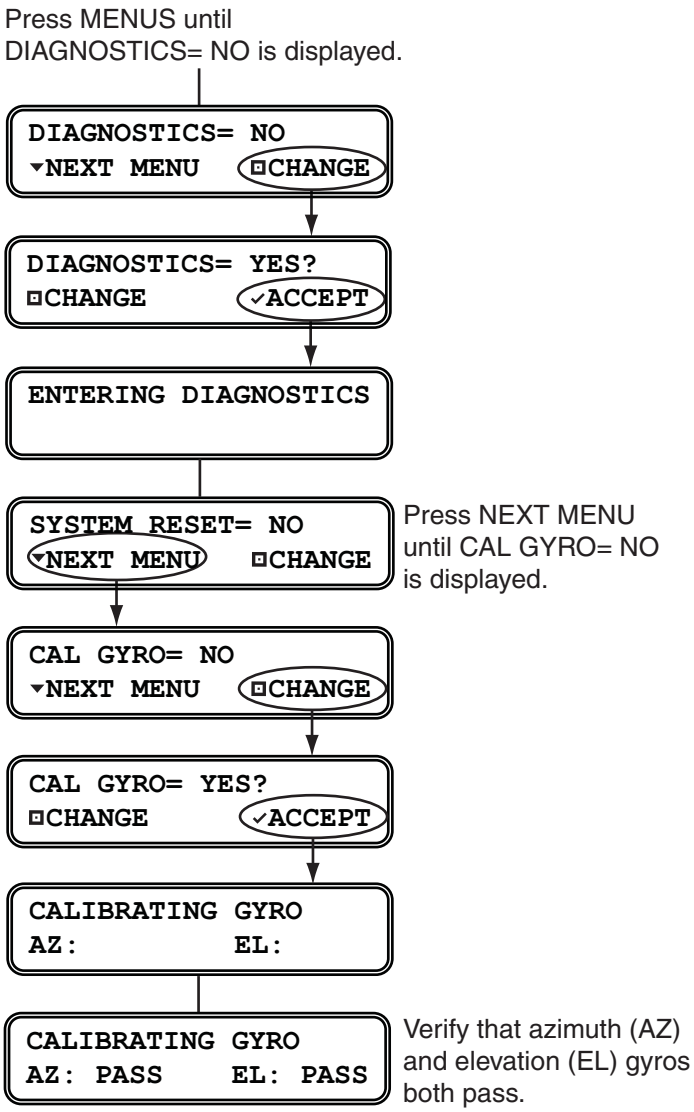
# Calibrating the Gyros

The TracVision antenna's gyros continuously measure the motion of your vessel and send this data to the antenna's motor control circuitry to keep the antenna pointed at the satellite. At the factory, each antenna gyro is precisely calibrated to work with the antenna's circuit board. Therefore, if you ever replace a gyro or circuit board in your antenna, follow the steps in Figure 22 to recalibrate the gyros for the new part.

***IMPORTANT!***

Calibrate the gyros only if directed by KVH Technical Support, and only while the vessel is stationary in calm water. A poor gyro calibration can reduce the performance of the antenna.

**Figure 22 Gyro Calibration**



# Changing Tracking Parameters

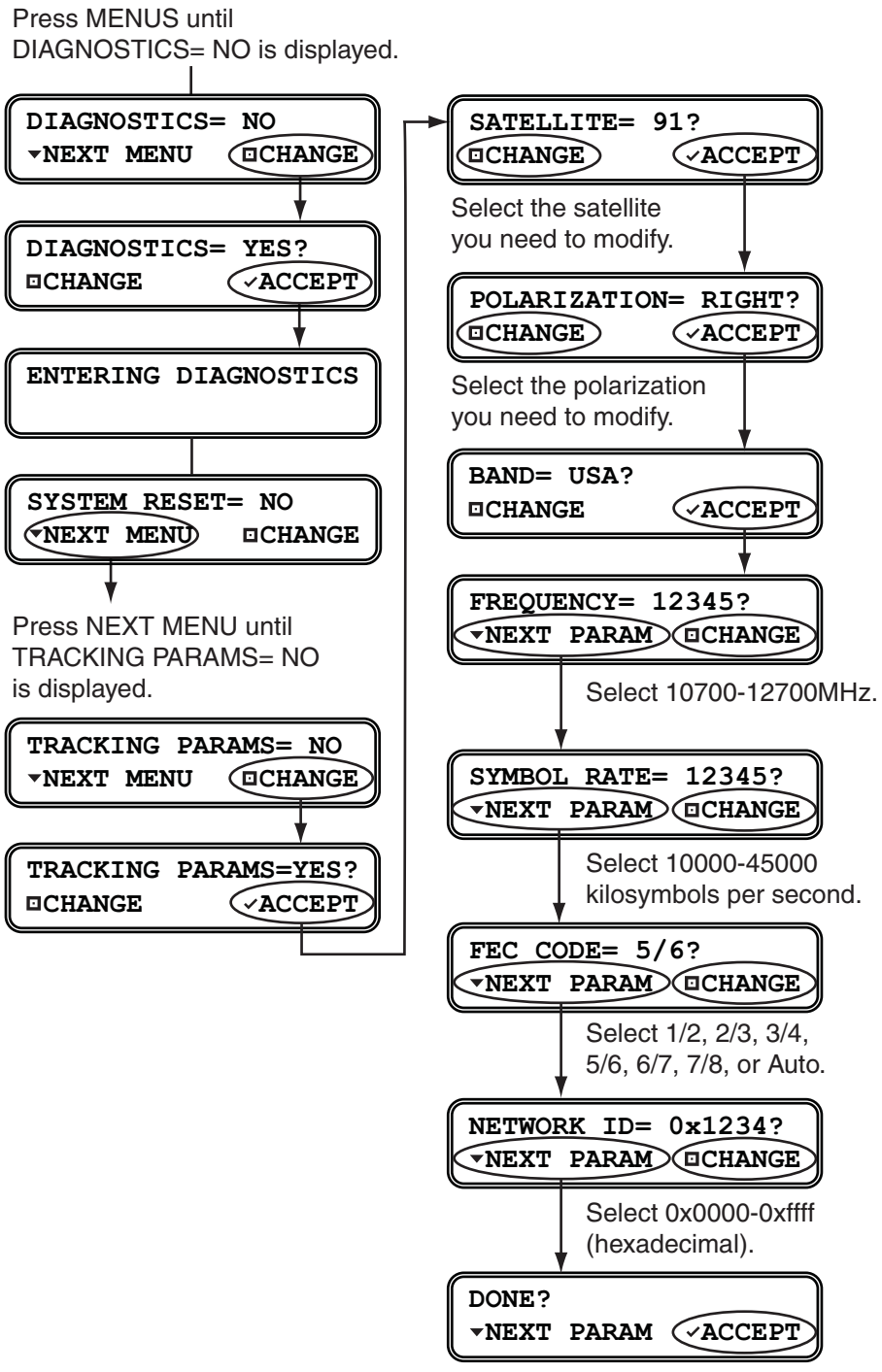
On rare occasions, a satellite service provider may change the configuration of one of its satellites. Since your TracVision antenna identifies a satellite based on the configuration data it has stored in memory, the antenna will no longer be able to track the satellite if its configuration changes. For this reason, the interface box allows you to change any satellite parameter stored in the antenna's memory.

***IMPORTANT!***

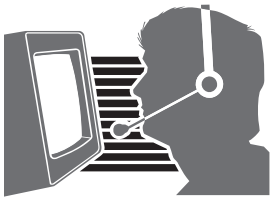
Change tracking parameters only if directed by KVH Technical Support. An incorrect tracking parameter can significantly reduce the performance of the antenna.

Follow the steps in Figure 23 on the next page to change a tracking parameter for an installed satellite.

Figure 23 Tracking Parameter Changes



# Technical Support



Your TracVision system is a sophisticated electronic device; only KVH-authorized technicians have the tools and expertise necessary to diagnose and repair a system fault. Therefore, if you experience an operating problem or require technical assistance, please call or visit your local authorized TracVision dealer or distributor. You can find an authorized technician near you by visiting our website at ***www.kvh.com/wheretogetservice***.

If you need help finding an authorized technician, please contact KVH Technical Support:

Phone: +1 401 847-3327
E-mail: ***techs@kvh.com***
*(Mon.-Fri., 9 am-6 pm ET; Sat. 9 am-2 pm ET)*

## Product Registration

Be sure to register your TracVision system with KVH. The registration process is quick, easy, online, and ensures the best possible service from KVH. Visit ***www.kvh.com/register*** or refer to the Product Registration Form.

When you register, you'll enjoy a wide range of benefits, including:

- Free e-mail notification of enhancements and software updates to improve the performance of your system
- Fast, convenient customer and technical support
- Alerts about changes and improvements to services and programming
- Product news and special offers
- Complete privacy - KVH will never sell or share your data with other companies or organizations

# Appendix A
# Wiring Diagrams

This appendix provides wiring diagrams for various receiver configurations.

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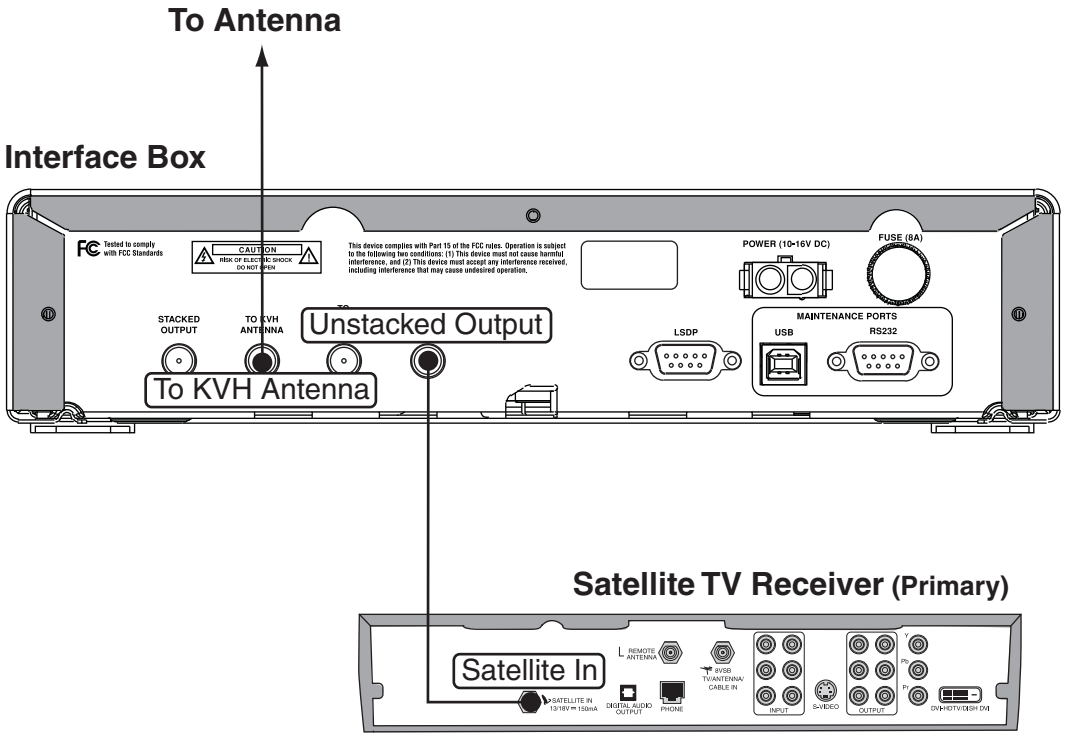
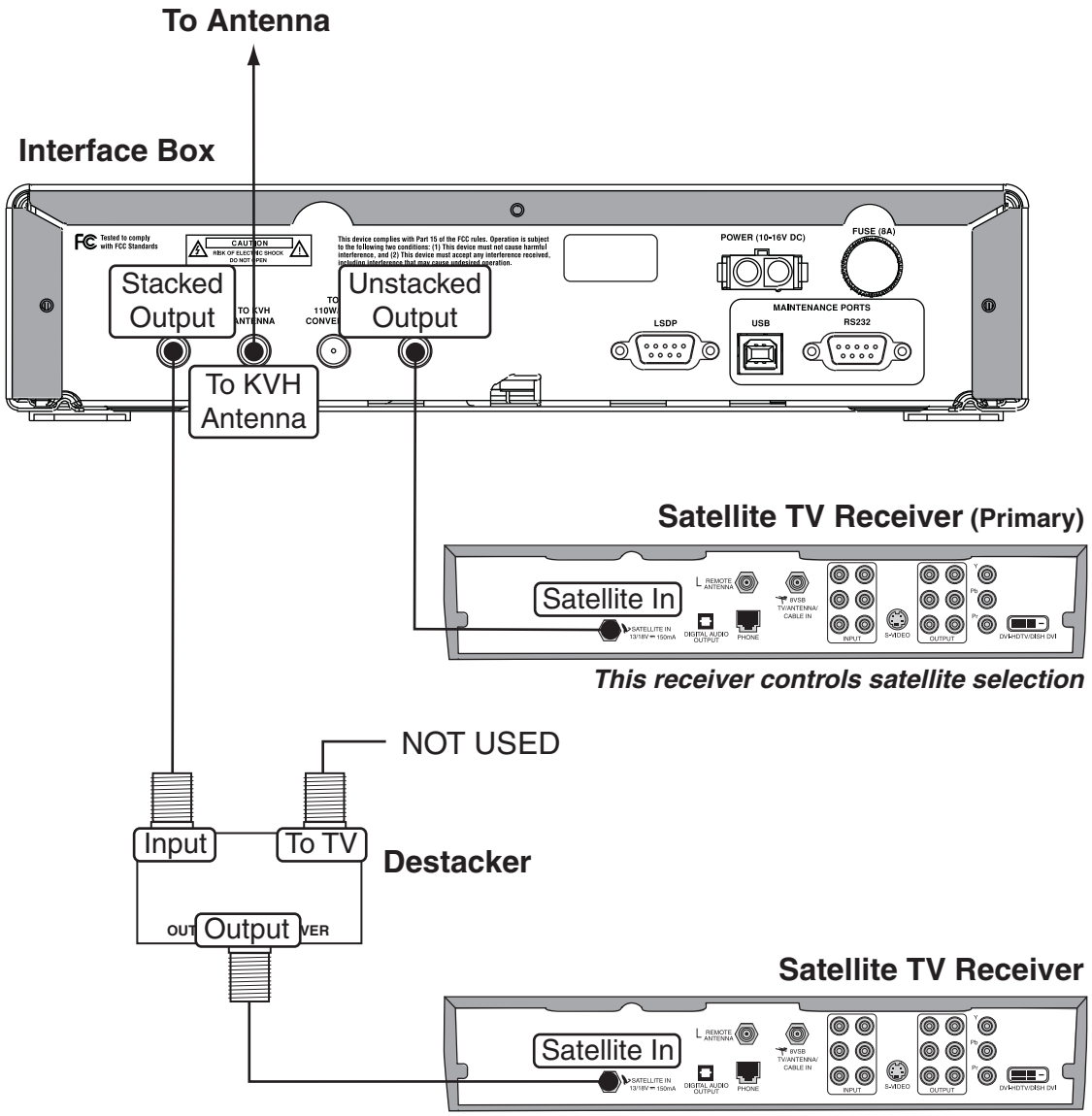
# Wiring Diagram - 1 Receiver



# Wiring Diagram - 2 Receivers



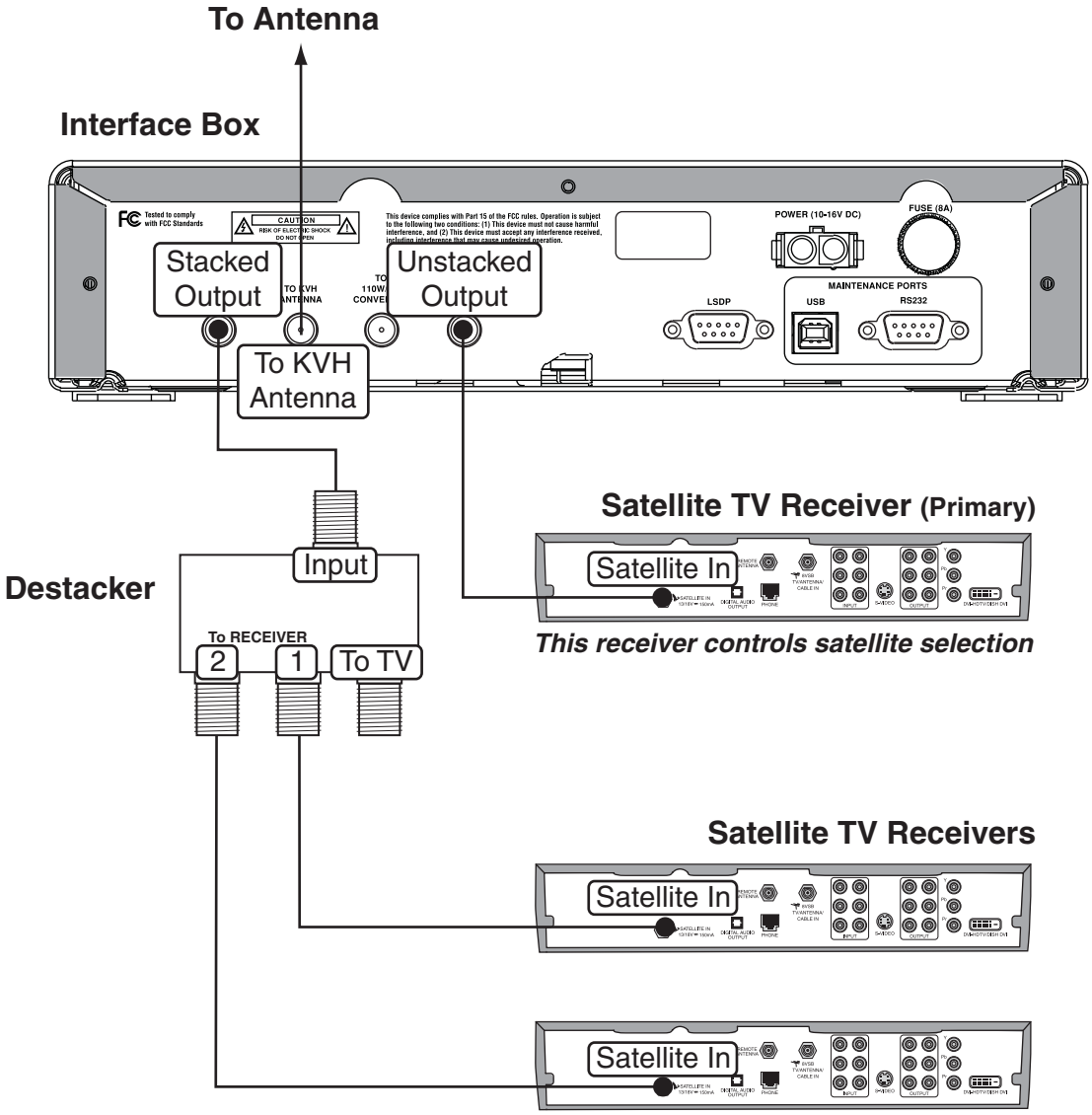

## Destacker (Single-Output) Required

The single-output destacker (KVH part #19-0347) converts a stacked signal into an unstacked signal, which standard satellite TV receivers are configured to decode. The interface box has two satellite TV outputs: "Unstacked" and "Stacked." You will need to install the destacker between the "Stacked" output and your second receiver.

## Primary Receiver Controls Satellite Selection

The receiver that you connect to the "Unstacked" output is the primary receiver. If the system is set up for automatic switching, the primary receiver controls satellite selection.

# Wiring Diagram - 3 Receivers




## Destacker (Dual-Output) Required

The dual-output destacker (KVH part #19-0410) converts a stacked signal into two unstacked signals, which standard satellite TV receivers are configured to decode. The interface box has two satellite TV outputs: "Unstacked" and "Stacked." You will need to install the destacker between the "Stacked" output and your second and third receivers.

## Primary Receiver Controls Satellite Selection

The receiver that you connect to the "Unstacked" output is the primary receiver. If the system is set up for automatic switching, the primary receiver controls satellite selection.

# Appendix B Menus Quick Reference Guide

This appendix provides a quick reference guide to the interface box menu structure.

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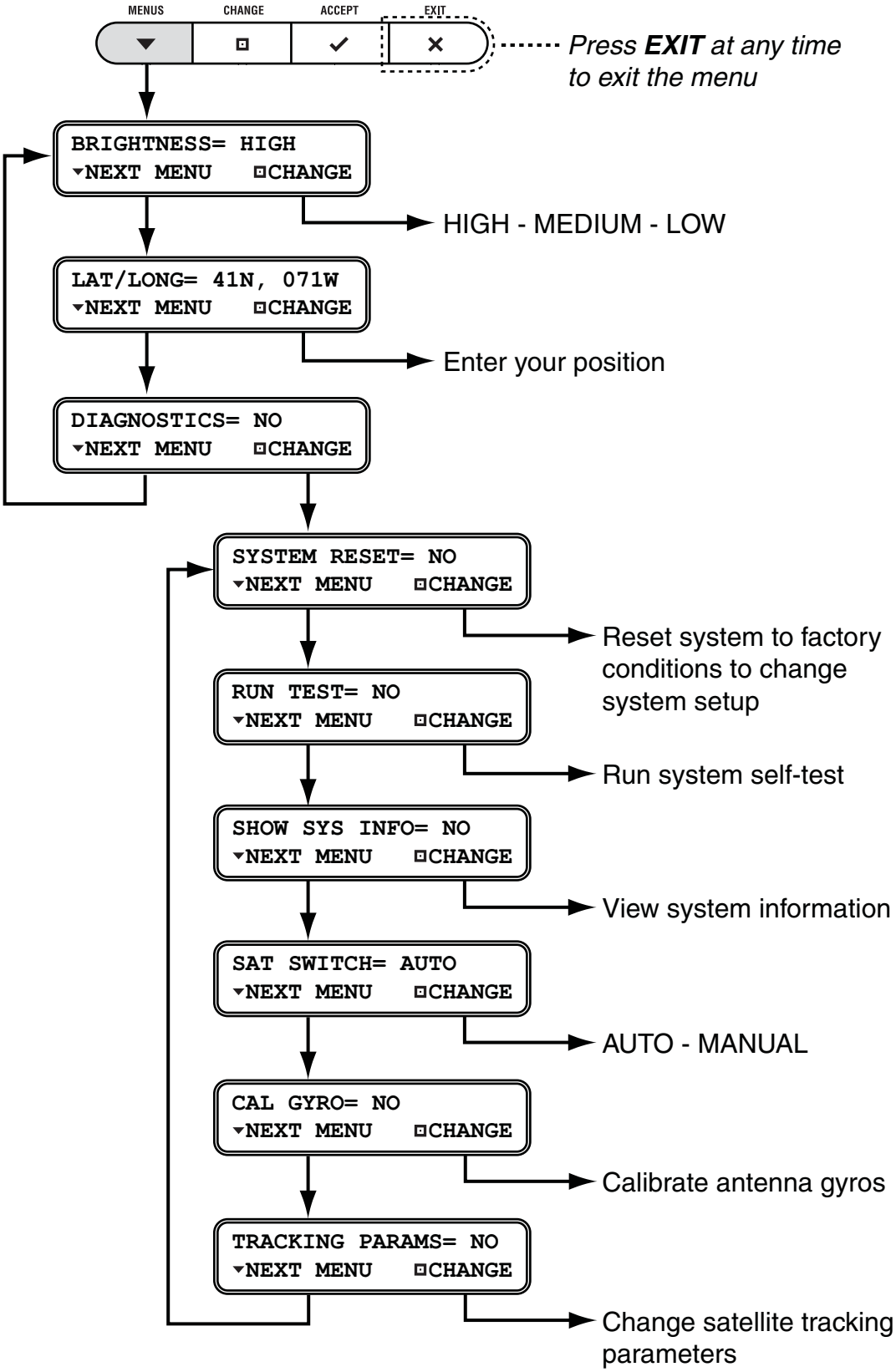
# Interface Box Menus



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